August, 1956

THE CHEMIST

VOLUME XXXIII NUMBER 8

HAROLD A. LEVEY (*Right*) *accepts Honor Scroll from* DR. CARL M. CONRAD. DR. GEORGE P. MEADE *is in the center.*

(See Page 327)

SPECIAL CHEMICALS

To Your Specifications!

Leading companies in many chemical processing fields regularly benefit from Baker & Adamson's "custom-made" chemical service. They find it simpler and more economical to depend on B&A's extensive manufacturing facilities and versatile production skills than to produce their own special chemical requirements.

This specialized service is readily available whenever you require chemicals custom-made to your specifications. B&A's controlled production techniques, gained in years of reagent chemical manufacture, guarantee you uniform product quality, lot after lot. Deliveries can be scheduled as desired.

More than 1,000 high purity chemicals are manufactured by Baker & Adamson. They are available in quantities ranging from small bottle lots of laboratory reagents to carloads of fine chemicals. Write, on your business letterhead, for a copy of B&A Fine Chemicals Catalog.

SAVE EXPENDITURES FOR PLANT, EQUIPMENT. Save making staff additions, too! Have your new and special chemicals custom-made by Baker & Adamson. For volume production on a new product . . . or for pilot plant runs . . . B&A's Custom-Made Chemical Service can save you time and money.

Write for information or call any office listed. An early *confidential* discussion with a trained B&A Technical Representative will help assure prompt deliveries!

GC Allied Chemical

REAGENTS B·A STANDARD OF PURITY FINE CHEMICALS

BAKER & ADAMSON® *Fine Chemicals*

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Offices: Albany* • Atlanta • Baltimore* • Birmingham* • Boston* • Bridgeport* Buffalo* • Charleston* • Chicago* • Cleveland* • Denver* • Detroit* • Houston* Jacksonville • Kalamazoo • Los Angeles* • Milwaukee • Minneapolis • New York* Philadelphia* • Pittsburgh* • Providence* • St. Louis* • San Francisco* • Seattle Kennewick* and Yakima (Wash.)

In Canada: The Nichols Chemical Company, Limited • Montreal* • Toronto* • Vancouver*

SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

*Complete stocks carried here

CELITE diatomite pigments add "tooth" and toughness to primers and topcoats

Photomicrograph reveals Celite's jagged edges which provide ready adhesion of paint to any surface

MILITARY and maintenance coatings need extra durability to withstand the severe conditions they encounter. That's why so many government paint experts specify Celite* with its hard, tough diatomaceous silica structure. The irregularly shaped particles projecting through the film anchor primers to any surface . . . give an excellent "tooth" for adhesion of topcoats.

Celite controls gloss to any degree including the dead flat finish of camouflage coatings. As a filler, Celite's high bulking properties hide surface imperfections and ease sanding. The loosely interwoven structure of the particles creates a flexible crack-resistant film.

Write for complete information on Celite pigments to Johns-Manville, Box 14, New York 16, N. Y. In Canada, address 565 Lakeshore Rd. East, Port Credit, Ontario.

JM

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products

Johns-Manville CELITE THE EXTENDER PIGMENTS FOR ALL COATINGS

The CHEMIST

Reg. U. S. Pat. Off.

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

60 East 42nd street, New York 17, N. Y.

Entered as second class matter April 8, 1936 at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly.

Subscription price, $2.00 a year to Members, $3.00 to Non-Members. Single copy, this issue, $0.25. Copyright, 1956 by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

Volume XXXIII August, 1956 Number 8

Editor: V. F. KIMBALL

Editorial Advisory Board

RAYMOND E. KIRK WALTER J. MURPHY

Contributing Editors

Lawrence H. Flett, New London, New Hampshire
D. H. Killeffer, 168 Westchester Ave., Tuckahoe 7, N. Y.
Dr. Frederick G. Sawyer, Ralph M. Parsons Co., 617 So. Olive St., Los Angeles, Calif.
Florence E. Wall, Consultant, Writer, 210 East 68th Street, New York, N. Y.
Martin B. Williams, P. O. Box 215, Centerville, Alabama

Department Editors

Condensates, Dr. Ed. F. Degering • *Opportunities*, Doris Eager

Chemical Books Abroad, Rudolph Seiden

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

SCHEDULED FOR EARLY PUBLICATION

Sixteen Years of Chemical Education in China, Dr. Peter P. T. Sah
Should Consulting Engineers Advertise? (Reprint), Richard L. Moore, F.A.I.C.
Award of New Jersey AIC Chapter Honor Scroll to H. F. Wakefield, F.A.I.C.
Award of Western AIC Chapter Honor Scroll to George Parkhurst.
New York Chapter Honor Scroll to Dr. C. N. Frey, F.A.I.C.
Annual Reports of AIC Chapters and Committees
Let's Talk About Your First Job, Dr. Ray P. Dinsmore, Hon. A.I.C.
Professional Recognition, Dr. Ray P. Dinsmore, Hon. A.I.C.
What Management Expects of the Chemist, George L. Parkhurst
Communications: The Chemist's Viewpoint, Dr. Johan Bjorksten, F.A.I.C.
Managing Yourself, Your Job, and Others, Richard B. Davis
The Qualities Industry Seeks in Technical Personnel, C. J. Mayberry

The movement now started in New York to utilize retired chemists and chemical engineers to alleviate the shortage of qualified science teachers should be started in every State. See page 323.

IN THIS ISSUE

Editorial:
Retired Scientists Needed as Teachers **323**
Special Announcements:
Chapter Officers, 1956-1957 ..... **324**
Application for New AIC Chapter **325**
AIC Reprints Available **325**
Honor Scroll Acceptance, Harold A. Levey, F.A.I.C. **327**
Introduction of Harold A. Levey, Dr. George P. Meade, F.A.I.C. **329**
Presentation to Harold Levey **331**
Will You Come **332**
Psychological Studies of the Characteristics of Scientists, Dr. Mary D. Rootes **333**
Opportunities **339**
Council **340**
For Your Library **344**

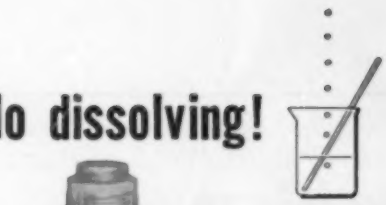
TO COME IN SEPTEMBER

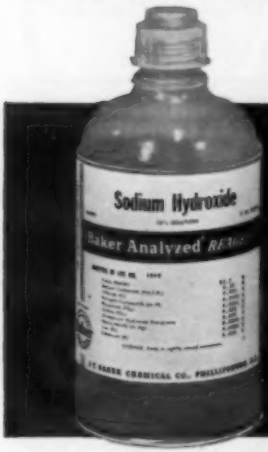
The Fall season will start with a discussion on "Let's Talk About Your First Job," by Dr. Ray P. Dinsmore, Hon. AIC, and former AIC president. "Managing Yourself, Your Job, and Others," by Richard B. Davis will contribute to this theme., as will, also, "The Qualities Industry Seeks in Technical Personnel," by C. J. Mayberry, chief chemist of the Chalmette Works of Kaiser Aluminum & Chemical Corporation. The human interest story will be the award of the New Jersey AIC Chapter Honor Scroll to H. F. Wakefield, F.A.I.C., of the Bakelite Company.

We Recommend for Your Needs

Baker & Adamson Division ..... Inside Front Cover
J. T. Baker Chemical Co. 322
Bios Laboratories 338
Food Research Laboratories, Inc. 326
Johns-Manville 319
O. Johnson & E. Scudder 346
The Lento Press 344
Molnar Laboratories 344
William E. Phillips, Inc. 326
Phoenix Chemical Laboratories 339
Robinette Research Laboratories 345
Scientific Glass Apparatus Co. ..... Inside Back Cover
Foster D. Snell, Inc. 339
R. Steckler Laboratories 332
Truesdail Laboratories 328
U.S. Stoneware ..... Outside Back Cover

No dissolving! No filtering!





Save time with 'Baker Analyzed' SODIUM HYDROXIDE 50% SOLUTION

Now—save the valuable time required to make up solutions from NaOH in solid forms. Specify 'Baker Analyzed' Sodium Hydroxide, 50% Solution and eliminate time-consuming solution and filtration steps. You will work faster—and get all these extra advantages as well:

- **Extremely low carbonate—a maximum of 0.1%**
- **Actual lot assay—permits direct calculation**
- **Actual lot analysis of critical impurities**
- **Compliance with ACS specifications for solid sodium hydroxide**
- **Corrosion-resistant polyethylene bottle and cap**
- **Convenient one-pint size (liquid measure)**

Baker Sodium Hydroxide, Reagent, 50% Solution, is especially useful as a stock solution. Both standard and shelf solutions can be prepared by dilution . . . another instance of the value of the Baker actual lot assay. The product can be used directly for alkalizing Kjeldahl digestions and may be pipetted in controlled amounts into the flask.

'Baker Analyzed' Sodium Hydroxide, 50% Solution, is of particular value for nitrogen determinations in general food laboratories as well as in the cereal, meat, feedstock and dairy industries. The solution is an excellent choice in the saponification and analysis of fats and oils.

J. T. Baker Chemical Co.

REAGENT · CHEMICAL · FINE · INDUSTRIAL

Phillipsburg, New Jersey

EDITORIAL

Retired Scientists Needed as Teachers

THE attention of retired chemists and chemical engineers in the New York area is called to the following editorial, which appeared in *Engineering and Scientific Manpower Newsletter**, July 12, 1956:

Retired Engineers and Scientists A Service Opportunity

The Advisory Committee on Science Manpower, appointed by the New York City Board of Education, is considering the possibility of recommending the employment of retired scientists and engineers to meet the present shortage of science and mathematics teachers. Dr. Joseph W. Barker, President of the Research Corporation, presently President of The American Society of Mechanical Engineers, and a member of the Advisory Committee, made the suggestion at the June 4th meeting of the committee.

At a special conference called by Dr. William Jansen, Superintendent of Schools, on June 29th, and attended by Dr. Joseph W. Barker, Dr. C. Frederick Pertsch, Associate Superintendent in charge of the High School Division and Mr. Samuel Schenberg, (F.A.I.C.), Supervisor of Science, the entire matter was carefully considered. At the conclusion of the conference, Dr. Jansen indicated that a survey, made on June 26, 1956, showed a current lack of 47 full time science teachers needed to staff 235 science classes in the high schools in September. This shortage represents approximately 6% of the total number of science teachers employed in the high schools of New York City.

Dr. Jansen said, "The New York State Education Law requires a minimum of 8 semester hours in professional educational courses before anyone can be licensed to teach in the New York secondary schools. Such courses are not included as part of the degree requirements for scientists and engineers.

"If, as Dr. Barker suggests, there are a considerable number of retired scientists and engineers under the age of 70, who are willing to come to the assistance of our high schools in this emergency, I will be happy to urge Dr. James E. Allen, New York State's Commissioner of Education, to consider modification of the present regulations in order to enable these men to teach on a part time and emergency basis.

"In order to determine if such a supply of prospective teachers exists, *I urge all interested scientists and*

*Issued jointly by Engineering Manpower Commission of Engineers Joint Council, 29 W. 39th St., New York 18, N. Y., and Scientific Manpower Commission, 1507 M St., N.W., Washington, D.C.

engineers to write to Mr. Samuel Schenberg, Board of Education, 110 *Livingston St., Brooklyn* 1, *N. Y.,* and enclose a brief biographical sketch of their educational qualifications and scientific and industrial experience."

This action by Dr. Jansen will determine whether there is merit in the suggestion to recruit retired scientists and engineers *for part time teaching* to alleviate the shortage of science teachers in our secondary schools. Teachers of biology, chemistry, physics, related technical courses and mathematics are needed . . .

SPECIAL ANNOUNCEMENTS

Chapter Officers, 1956-1957

Following Chapter elections held this Spring and Summer, the officers of the AIC Chapters for the fiscal year 1956-1957, are:

Alabama

Chairman, Dr. Stewart J. Lloyd

Secretary-Treasurer, Dr. Warner Carlson, Medical College of Alabama, University of Alabama, Birmingham, Alabama.

National Council Representative, Dr. Emmett B. Carmichael.

Baltimore

Chairman, Dr. Leonard M. Rice

Vice Chairman, Dr. Norris W. Matthews

Secretary-Treasurer, Rev. Edward S. Hauber, S.J., Loyola College, Baltimore 10, Maryland.

Corresponding Secretary, Miss Dorothy Rice, 2317 Eutaw Place, Baltimore 17, Md.

Representative to National Council, Dr. Albin H. Warth.

Chicago

Chairman, Dr. Edmund Field

Chairman-Elect, Dr. Harold M. Coleman

Vice-Chairman, John Krc, Jr.

Secretary, Miss Rose Marie Brunetti, Armour Research Foundation, 10 West 33rd St., Chicago.

Treasurer, Dr. C. A. Johnson,

National Council Representative, Dr. Johan A. Bjorksten.

Louisiana

Chairman, C. L. Hoffpauir

Vice Chairman, Dr. W. R. deMonsabert

Secretary-Treasurer, Mack F. Stansbury, Southern Regional Research Laboratory, 2100 Robert E. Lee Blvd., New Orleans 19, La.

Representative to National Council, Harold A. Levey.

New England

Chairman, Dr. Walter R. Smith.

Vice Chairman, Richard S. Robinson

Secretary-Treasurer, Dr. George B. Walker, Jr., Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass.

Representative to National Council, George H. Taft.

New Jersey

Chairman, Dr. Max Bender

Chairman-Elect, Dr. W. R. Sullivan

Secretary, Dr. John F. Mahoney, 100 Woodmere Drive, Westfield, New Jersey.

Treasurer, Dr. Curt Bamberger

National Council Representative, Dr. Cecil L. Brown.

New York

Chairman, Dr. Murray Berdick
Chairman-Elect, Dr. Ernest Becker
Treasurer, Shepherd Stigman
Secretary, Miss June Larsen, Sugar Research Found., 52 Wall Street, New York 5, New York.
National Council Representative, Richard L. Moore.

Niagara

Chairman, Dr. Johannes H. Bruun
Chairman-Elect, Dr. M. H. Fleysher
Secretary, Rev. Dr. Joseph B. Muenzen, S.J., Canisius College, Buffalo 8, New York.
Treasurer, Ray F. Seifert
National Council Representative, Warren B. Blumenthal.

Ohio

Chairman, Harold M. Olson
Chairman-Elect, Donn F. Siddall
Secretary-Treasurer, Dale F. Behney, 1018 Roslyn Ave., Akron 20, Ohio.
National Council Representative, Guy A. Kirton.

Pennsylvania

Chairman, Dr. John H. Bohrer
Secretary-Treasurer, Dr. A. M. Immediata, International Resistance Corp., 401 N. Broad St., Philadelphia, Pa.
National Council Representative, Marcus Sittenfield.

Washington, D.C.

President, Wesley R. Koster
Vice President, John G. Fletcher
Secretary, Frederick S. Magnusson, Bur. of Foreign Commerce, U. S. Dept. of Commerce, Washington 25, D.C.
Treasurer, Albert F. Parks
National Council Representative, Wesley R. Koster.

Western

Chairman, Dr. Frederick G. Sawyer
Vice-chairman, Thomas J. Kehoe
Chairman-elect, Alfred J. Webber
Treasurer, Donald K. Peterson
Co-Secretary, Sr., Gilbert E. Sinclair, 1160 Hugo Reid Drive, Arcadia, Calif.
Co-Secretary, Jr., Alvin May
National Council Representative, Frank B. Havens.

Application for New AIC Chapter

A petition signed by AIC members in the Minneapolis-St. Paul area has been received by the AIC Secretary, for the establishment of a new Chapter to be known as the Twin-Cities Chapter of THE AMERICAN INSTITUTE OF CHEMISTS. Action on this petition will be taken at the next meeting of the AIC Council.

AIC Reprints Available

"The Employed Chemist and His Employer." Report of Committee on Employer-Employee Relationships. Dr. E. H. Northey, chairman. (20 cents each.)

"An Educator Observes the Chemist," By Dr. Roger Adams, Hon. AIC. (15 cents each.)

"A Proposed Contract for Chemists and Chemical Engineers." Prepared by the Sub-Committee on Employer-Employee Relations. Chairman of Sub-committee, Dr. Lloyd A. Hall, (15 cents each.)

"Sizing up Members for the Team." Paper on techniques of interviewing applicants for positions. By Dr. George L. Royer. (15 cents each.)

"Opportunities in Chemistry." By Dr. Maurice J. Kelley. Mimeographed (20 cents each.)

These reprints may be ordered from The Secretary, The American Institute of Chemists, 60 E. 42nd St., New York 17, N. Y.

William E. Phillips, Inc.
435 N. Michigan Ave., Chicago 11, Ill.
Midwest Agent

USE ARAPAHOE
for special
CUSTOM SERVICES

Arapahoe's isolation at Boulder, Colorado, is an important factor in security considerations imposed by confidential or exclusive contract production.

Yet, being only 33 miles from Denver, commanding ample rail, truck and airline services, and having the home-town availability of the University of Colorado's outstanding Department of Chemistry, more than compensate for the brief time away from large chemical centers.

Arapahoe's keynote is flexibility. Range of service is not tied to present equipment. Company has money and credit to buy according to the demands of its undertakings.

A-S-P

Honored: Dr. Edgar C. Britton, F.A.I.C., of the Dow Chemical Company, who will receive the Perkin Medal of the American Section of the Society of Chemical Industry, at the Perkin Medal Award banquet, September 14th, at the Waldorf-Astoria, New York, N. Y.

FOOD RESEARCH LABORATORIES, INC.
Founded 1922

RESEARCH
ANALYSES • CONSULTATION

Biological, Nutritional, Toxicological Studies for the Food, Drug and Allied Industries

48-14 33rd STREET
LONG ISLAND CITY 1, N. Y.

Bulletin "What's New in Food and Drug Research" available on letterhead request.

Transferred: Clifford J. Robertson, F.A.I.C., to the New York office of Procter and Gamble Company, from the Cincinnatti office. His new address is: The Procter & Gamble Distributing Co., 155 E. 44th St., New York 16, N. Y.

Petroleum Distribution: New course starting with the Fall semester at Western Michigan College, Kalamazoo, Mich. For booklet, write to Dr. George Kohrman, Dean, School Applied Arts & Sciences, at the college.

New Position: For Martin B. Williams, who is now chemist, Materials Laboratory, Rocket Development Labs., Redstone Arsenal, Huntsville, Alabama.

Appointed: John H. Lambert, A.A.I.C., as sales representative for Industrial Resins Sales, Barrett Division, Allied Chemical & Dye Corp., New York, N. Y.

Mellon Institute: To enter the radiation research field. Dr. Robert H. Schuler, M.A.I.C., formerly on the staff of Brookhaven National Laboratory, has been selected to head the new Department of Radiation Research, which has just purchased a 3-million volt Van de Graaff particle accelerator.

Honor Scroll Acceptance

Harold A. Levey, F.A.I.C.

8127-33 *Oleander St., New Orleans* 18, *La.*

(Remarks when the author received the Honor Scroll of the Louisiana AIC Chapter, May 1, 1956, New Orleans, La.)

NEARLY all of our scientific societies direct their recognition to scientific achievements, and make their awards accordingly. This deviation from standardized objectives, by making awards apart from any contribution or any advancement to chemical science that its recipients may have made, is what largely distinguishes the AIC from others. This element of distinction might also account for its relatively small size. Your membership in the AIC automatically marks you as an altruistic individual. Even if you are an inactive member, you have contributed your dues toward the advancement of the professional status of the chemist. This is an unselfish gesture because, while you will benefit to the extent that you are one member of this group, the other members will in all probability benefit to the same extent. This society is a group truly banded for the common good as well as that of all chemists in general.

Because of these objectives, this society directs its efforts toward the recognition and reward of individuals who contribute their energies in this direction, whether they are members or not.

There are more and varied fields of effort toward the chemists' advancement than may be initially apparent. Initially, we recognize that our qualifications as chemists are of basic importance and naturally precede all other factors in attaining our desired ends. However, many other phases of activity lend themselves with much weight toward the achievement of these goals. These include employment, legislation, many forms of human relations including employment contracts, codes of ethics, patent rights, private and public recognition of achievements and scientific contributions with their just rewards, and other phases of activities probably of less significance.

In accepting this award, I do so with humility. The effort I have directed toward the betterment of my co-professionals has always been rewarded by the tremendous personal satisfaction I have gained in the doing. For the past three decades this service has been one of my avocations. Many have made me their confidant; my office became a clearing house for changes in chemical personnel in this general area. My activities as an independent chemical counsellor not only enabled me to be available to render this service, but

also my intimate knowledge of the chemical and related industries of this area enabled me to suggest the proper contacts for the desired connections. My knowledge of technical personnel also enabled me to recommend to the chemist seeking employment the proper party to approach.

In many instances my discussions have resulted in partially trained chemists returning to the universities for the batchelor's degree. Others have gone on for the master's and doctor's degrees. They have become better qualified for their work, have increased their earning power. Many have returned to my office to express their appreciation for the counsellor service.

Some sixteen years ago, I saw the possibilities of broadening this service both in scope and territory, and so with suitable help, I organized the AIC Louisiana Chapter, with ever increasing results. There has been directed to my office, by our parent society, parties both from this general area as well as individuals who indicated their desire to locate in this area, and who sought employment as chemists.

During the depression years, unemployed chemists were numerous and frequented my office at close intervals. However, with the post war scarcity of chemists resulting from the abnormally rapid growth of chemical industry in this area, such visitors have been relatively few.

There has been only insignificant legislation in recent years that would have more than meager bearing on the welfare and status of the professional chemist. Based on the latest surveys of the American Chemical Society, the consensus is that the chemist does not look favorably on being licensed. This situation is unfortunate and militates against the recognition of the chemist as a professional practitioner. At present anyone can designate himself as a chemist. The only present authenticated sources of classification are: The government Civil Service Commission and the board of membership of The American Institute of Chemists. This self-designation as chemists by individuals who came into my office has always deeply impressed me of the urgent need for classification of persons as chemists, preferably by a government constituted source . . .

Introduction of Harold A. Levey

Dr. George P. Meade, F.A.I.C.

Vice President, Colonial Sugars Company, Gramercy Refinery, Gramercy, Louisiana.

(Presented when Mr. Levey received the Honor Scroll of the Louisiana Chapter, New Orleans, La., May 1, 1956.)

A PARTICULARLY pleasing aspect of this meeting is that we have a cross-section of the entire chemical fraternity in this area... It may be said that Harold Levey himself is a cross-section of the chemical life of the New Orleans area, since he has been a potent factor throughout his career in the AIC, the American Institute of Chemical Engineers, and the American Chemical Society.

Perhaps there is altogether too much separation and setting apart by many of those in the various fields of science; too much pigeon-holing and tagging of the activities of the individuals. Specialization is quite a different thing, and a most essential one in modern activities, but specialization does not mean withdrawing into a shell or disregarding the activities of other fields. Fortunately for all of us and for chemical activities in South Louisiana, Harold Levey has not been a pigeon-holer.

Many who belong (as most of us do) to both the American Chemical Society and the American Institute of Chemical Engineers will be surprised to learn that when the AIChE was first proposed as an organization in 1908, many prominent members of the ACS were much disturbed at the idea of such an organization. The man for whom I was working at the time, one of the prominent sugar chemists of his day, was sure with many others that the new organization would result in a split-off of all those interested in industrial chemistry. At about this time, the ACS started the magazine, *Industrial & Engineering Chemistry*, and the formation of the first division of the ACS, that of Industrial and Engineering Chemistry, was an outgrowth of this idea that the chemists engaged in industrial work would break away if the new organization gained strength. Few except those with great vision realized that the two organizations would supplement rather than oppose each other, but those who combatted the organization and growth of the AIChE were much upset in 1910. We smile today at the idea that chemists should be afraid of chemical engineers. Harold Levey has been extremely prominent in both these organizations.

This shying away from words and titles and this separation into categories is not limited to chemical fields, as I well know in my sparse association with zoologists and herpetologists. To call a man a "natural-

ist" or "a student of natural history" is almost a dirty word if he happens to be an "ecologist." It is now quite fashionable to be called a "wild-life specialist."

This fear of special labels in the scientific field can be made quite ridiculous by asking, was Pasteur a chemist, a microbiologist, a biochemist, an immunologist, or a bacteriologist? One thing that he was not was a Doctor of Medicine, and the physicians of his day were largely antagonistic to his work because a mere chemist dared to teach them the basis of disease. The tag that he bears has little significance today. The results of his work are what count.

In the light of this question of tags or labels, it is interesting to call attention to the breadth of educational background that Harold Levey has. In 1910, he graduated from Tulane with a B.E. in Mechanical Engineering; the following year, he obtained the B.E. in Electrical Engineering. In 1915, he completed courses in chemistry at the University of Illinois with the B.S. in chemistry, and in 1916 he obtained the M.S. in chemistry from the same university. This is the real chemical engineer—not a chemist or an enginer, but a chemist and an engineer, both.

One of the most engaging of all of Harold's activities has been what he has described as his "avocation"; counselling young men in the general field of chemistry and chemical engineering and aiding them in obtaining employment. We hear much today about encouraging and developing young scientists, but Harold Levey has done more than talk about it—he has done it. Most Americans, when they think about encouraging or advancing some cause, picture a large organization, public grants of money, machinery for implementing the project, in short "bigness." Harold Levey did not ask, "What can we do" but "what can I do?"

I shall discuss this point of attracting young people into scientific work, a matter in which all scientific organizations are interested. One of the reasons why high school students, both boys and girls, are not following scientific bents as much as they might is the popular notion, furthered by the movies, radio, television, and the Sunday supplements that science is a mysterious field of human endeavor involving abstruse mathematics, elaborate laboratory equipment, intricate gadgets, flashing lights and huge switchboards. In the minds of many students, science is equated with electronics; no electronics, no science. We must make clear that nuclear physics has not supplanted classical physics except in the public mind, and that chemistry is not a field limited to wonder drugs and miracle discoveries. We need more emphasis on the simple and direct methods that have served and are serving so well; more stress

on individual effort rather than organized research; more attention to the lesson taught by the history of science rather than to the marvels that the atomic age may bring. These ideas may not be as spectacular as some of the press agents would like, but if the desire is to attract the pupils of high intelligence rather than the geniuses, these ideas may be worth considering. The average bright student does not need to be over-awed, he needs to be attracted. The potential geniuses usually cannot be stopped. It is the general run of bright boys and girls that must make up the rosters of the science courses in the colleges and universities.

One of the principal reasons why Harold Levey is being honored is because of his example and encouragement to young men who are entering or have entered the field of scientific endeavor. He has dedicated much of his personal time and effort to such students. In addition, he was instrumental in establishing the AIC Louisiana Chapter which has as one of its broad aims the furtherance of chemistry as a profession.

It is evident then that the AIC Louisiana Chapter is honoring a most worthy recipient. A man of broad education who has made full use of that education; a chemical engineer in the truest sense; a founder of this Chapter of the AIC and a national councilor of the AIC; a participant and active administrator in the American Chemical Society and the American Institute of Chemical Engineers; a representative of the profession in civic affairs; one who has furthered legislation for the advancement of the chemical profession; a sponsor for young men entering the field of chemistry and chemical engineering; a consultant, manufacturer, and inventor of national standing; and above all a man of high professional ethics and conduct, a good citizen and an example to all of us in this community.

Presentation to Harold Levey

THE Honor Scroll of the Louisiana AIC Chapter was presented to Harold A. Levey, chemical enginering consultant, 8127-33 Oleander St., New Orleans 18, La., at a dinner meeting on May 1, 1956, in New Orleans.

Dr. Carl M. Conrad, head of the Cotton Fiber Section of the Southern Utilization Research Branch of the U.S. Department of Agriculture, and chairman of the Louisiana Chapter, presented the scroll to Mr. Levey, who was introduced by Dr. George P. Meade, vice president of Colonial Sugars Company. (Dr. Meade's introduction and Mr. Levey's acceptance remarks appear on the preceding pages of this issue of THE CHEMIST.)

Also at this meeting, student medals were presented to three outstanding students: John W. Thompson of Loyola University; James Eugene Davis of Mississippi State College, and Donald L. Wood of Tulane University. These presentations were made by Dr. W. R. deMonsabert, chairman of the Awards Committee of the Louisiana Chapter, and professor of chemistry at Loyola University.

Mr. Levey has for many years advised or sponsored young people interested in the chemical field, in addition to assisting those seeking employment in the New Orleans area or those seeking chemical personnel. He made this activity a hobby in his desire to do what he could individually to improve the profession. He was a founder of the AIC Louisiana Chapter to interest other qualified chemists and chemical engineers in professional matters. In recognition of his long and faithful work, the Honor Scroll bears the citation:

To

Harold A. Levey

For his tireless efforts towards the advancement of the profession of Chemistry.

New Offices: For the American Zinc Institute, Inc., in Suite 2020, 60 East 42nd St., New York 17 N. Y.

Will You Come

Oct. 5, 1956. Chicago Chapter. Dinner Meeting. Furniture Club, Chicago, Ill. Presentation of the Honor Scroll to Dr. Lloyd A. Hall, F.A.I.C., technical director, The Griffith Laboratories, Inc., Chicago. For information: Miss Rose Marie Brunetti, Armour Research Foundation, IIT, 10 West 35th St., Chicago 16, Ill.

Oct. 10, 1956. Dinner Meeting. National AIC Council and Board of Directors. The Chemists' Club, 52 East 41st St., New York 17, N. Y.

Dec. 1956. (Date to be announced). Pennsylvania Chapter. Joint meeting with American Chemical Society. For information: Dr. A. M. Immediata, International Resistance Corp., 401 No. Broad St., Philadalphia, Pa.

Dec. 12, 1956. National AIC Council and Board of Directors. Dinner Meeting. The Chemists' Club, 52 East 41st St., New York 17, N. Y.

Jan. 1957. (Date to be announced.) Pennsylvania Chapter. Presentation of the Honor Scroll. For information: Dr. A. M. Immediata, International Resistance Corp., 401 No. Broad St., Philadelphia, Pa.

Feb. 13, 1957. National AIC Council and Board of Directors. Dinner meeting. The Chemists' Club, 52 East 41st St., New York 17, N.Y.

May 21, 1957. National AIC Council and Board of Directors. Dinner Meeting. Sheraton-Mayflower Hotel, Akron, Ohio.

R. STECKLER LABORATORIES

8200 Harvard Ave. Cleveland 5, Ohio
BRoadway 1-4828

Research • Product Development
Consultation • Market Research
Product & Process Evaluation

SYNTHETIC RESINS, POLYMERS, COATINGS
Fully Equipped Laboratory

Psychological Studies of the Characteristics of Scientists

Dr. Mary D. Rootes

Associate Professor of Psychology at Newcomb College of Tulane University, New Orleans, Louisiana

(Presented at a joint meeting of the Louisiana AIC Chapter and the Louisiana Section of the American Chemical Society, Tulane University, April 20, 1956.)

ALTHOUGH "What's My Line?" has shaken our faith a bit, a good many of us still think in terms of occupational types, believing that each segment of the world's work draws a fairly definite kind of person. Perhaps after years of observation some of you would be willing to try to describe the accountant type, the bar-tender type, or the lawyer type: What does he look like, how does he dress, what does he like to do at a party, how does he handle himself in a poker game? . . .

Psychologists, as nearly as I have been able to gather it from the current typology, are those nosey people, usually peculiar looking, often a little bit strange, who insist on making ponderous studies to learn what everyone else knows already. With that in mind, you will not expect, from this paper, too much that is radically new. In their usual role of approaching an old problem from a new angle, psychologists have occasionally raised a question that the man on the street would dispose of in two minutes: "What is the scientist like?" On the occasions when they have been called in to assist government, the armed forces, or industry in the selection of personnel, psychologists have even had the opportunity to raise more practical sub-questions such as, "What distinguishes the chemist who will have a flair for administrative work from the creative research chemist?" . . .

I shall review certain general approaches explored by psychologists interested in the broad problem of scientific achievement. Faced as we are by a pressing need for scientifically trained personnel, any odds and ends of facts obtained in these ways may be worth scrutinizing for possible bearing on plans for recruitment and training of promising young people.

Psychologists have gone about studying the correlates of scientific achievement in roughly three ways: (1) Follow-up investigations of the adult careers of individuals who were studied during childhood; (2) Interviews and psychological testing with eminent living scientists as subjects; (3) Studies of biographical informa-

tion relating to eminent scientists of previous generations.

An example of the first-mentioned, and in some ways the most interesting approach, is Prof. Lewis Terman's 1954 report of comparisons between scientists and non-scientists in a group of 800 gifted men. Prof. Terman has studied these men for some thirty-four years now at the cost of one-quarter of a million dollars. Back in 1921, surveying schools in California, he selected approximately the top one per cent, I.Q.-wise, for intensive study. Those children, ranging in I.Q. from 135 to 200 were thought of as a particularly interesting group to watch. Prof. Terman has had little reason for disappointment. Follow-up studies in 1940 showed that most of the men had graduated from college and that, of these, the per cent granted advanced degrees was more than five times as large as for college graduates in general. In 1940, seventy-one per cent of the men were in professional, semi-professional, and higher business occupations.

The problem Prof. Terman tackles in the 1954 report is the determination of which characteristics, among the many observed during the thirty-year period, differentiate scientists and non-scientists. In his group of 800 are fifty-one men doing basic research in mathematics, physics, chemistry, engineering. Another 104 are engineers engaged primarily in work other than basic research; sixty-one are in biological research and medicine. It is these three groups, engaged in scientific and technical work, that Terman compares with non-scientists: 68 who majored in a natural science but did no research; 200 who majored in a social science but did not go into research; 83 who studied law; 127 who majored in the humanities, and 177 who did not complete college.

An example of the second approach is Anne Roe's careful study of 64 scientists selected by colleagues as among the most eminent men in their respective fields. Dr. Roe contacted these men, explained the purpose of the investigation and asked for their cooperation. A gratifyingly large proportion of those originally chosen considered the study worthwhile and gave generously of their time as participants in interviews and testing sessions with Dr. Roe. Included among the 64 are approximately equal numbers of biological, physical and social scientists. In addition to her major focus on the characteristics of scientists, Dr. Roe has given considerable attention to comparisons among the three groups. In this report I have drawn primarily upon the information obtained from the natural scientists, who differ in certain important respects from Dr. Roe's social scientists group.

Finally, a number of studies have proceeded along the lines of selecting eminent scientists on the basis of the judgments of historians of their

fields of endeavor, and combing biographical data to arrive at generalizations concerning their backgrounds and traits. This was the earliest approach to the problem and in many ways the least satisfactory, since the available facts about men of the past are generally scant and always subject to possible inaccuracies and distortions. Still the availability of large numbers of cases whose achievements can be more accurately assessed than is possible in the case of contemporaries makes this a tempting approach. It will perhaps be of interest to glance at certain results of these investigations as we examine the findings arrived at in other ways.

Now for the results: There are four areas in which fairly clearly-cut differences have appeared. First, *family background*. Generally we might say that scientists tend to grow up under circumstances providing three things: Above average intellectual stimulation; opportunity for independence, and an atmosphere of emotional distance between father and son.

Terman's 51 men doing basic scientific research were characterized more frequently than any other group in the study by fathers who were college graduates and by fathers who were professional men. In Roe's group, 53 per cent were sons of professional men. The studies of eminent scientists of the past confirm this finding that scientists derive chiefly from educated homes and from the professional group in particular. An interpretation offered by Dr. Roe is that a boy is most likely to develop into a scientist if he grows up in a home where knowledge is highly valued for its own sake. It was her impression that, not only in the cases where the father was highly educated but in most of the others as well, there was early contact with intellectual interests and values in the home.

A second finding of interest in relation to family background has to do with the position of the child in the family. Roe found that 39 of her 64 scientists were first-born children. This is considerably more first-born than would be expected on a chance basis. Historical studies confirm the preponderance of first-born children in groups of eminent men. However, this may well be a correlate of eminence as such rather than a factor specifically associated with scientific endeavor. It does not show up as characteristic of Terman's less select scientific group. In any case Roe's interpretation of the striking preponderance of first-born in her group emphasizes the values inherent in this position from the standpoint of encouragement of personal independence, indulgence in pursuing individualistic interest, and freedom from the inadequacy feelings arising from competition with older and stronger siblings. Others have suggested the possible importance of the greater amount of adult

stimulation that may be the lot of the eldest child.

Terman's data on family relationships, obtained from his men during adulthood, suggest an important difference between scientists and non-scientists with regard to the relationship to the father. The father-son relationship typical of the scientists might be characterized as one of respectful distance. More of the scientists than of the other groups felt that the father had been slightly or not at all over-solicitous toward them. Fewer of the basic research group than of any other group felt that there had been more than moderate affection and understanding between themselves and their fathers. Roe in summarizing her own findings on early affectional relationships of natural scientists states: "They seem to have less often had intensely close relationships with parents or siblings. I am sometimes not very clear on their relations to their mothers, but they seem much more often than the social scientists to have had fathers whom they respected, but to whom they were not close, and who put relatively few emotional pressures upon them."

Second, *childhood interests and abilities*: By and large scientists show their bent from an early age. In Terman's study, parents' mention of special abilities in 1922 (when the group averaged twelve years of age) show interesting differences between scientists and non-scientists. Future engineers were noted to have outstanding mechanical ability twice as frequently as were the non-science groups. Nature study and science hobbies were much more frequently mentioned for the two research groups than for non-scientists. With respect to childhood preference for science as an occupation, the scientist groups had frequencies two or more times as high as the other groups. The scientists more frequently than the other groups gave serious consideration to life work before reaching sixteen; and far more frequently than in the case of the other groups, their first serious choice of life work was fulfilled.

Many of Roe's eminent scientists likewise give evidence of early development of scientific interests. The natural scientists frequently were intensely interested in mechanical and scientific hobbies. Most of them enjoyed school, often discovering early that mathematics and science were their best subjects.

Third, *Social Characteristics*: As a group, scientists seem less socially inclined than people in general. Terman's science groups, as children, were rated less high than others in leadership, sensitivity to approval or disapproval, popularity, fondness for large groups. During high school days they participated relatively little in high school activities and competitive sports. As young adults most of them rated themselves low in interest in politics, in social life, in

active sports. In middle age, they were less often participants in community affairs and service organizations. Hobbies which attracted them more frequently than they attracted non-scientists were photography, outdoor life, and music. Looking back on their youth from the vantage point of middle age, the basic research groups (not the engineers) often report having felt different from other children. They usually felt that their social adjustment had been below average and that they had had less than the usual interests in social success. Far fewer of them than of non-scientists felt that social adjustment or "good personality" had been important factors in their life accomplishments to that date.

Roe comments with respect to her group: "For reasons which are often obscure, the men who became physical and biological scientists early found special interests and special satisfactions away from personal relations. It was easier for them to become immersed in objects, in things, outside of the human realm."

Fourth, *motivation and intellectual characteristics*: Roe's outstanding impression of her 64 eminent scientists was that of a group of men intensely interested in their work. Asked about how they spent their leisure time, a not uncommon response was, "What leisure time?" Typical comments were: "My real recreation is doing what I want to do, my work"; "I have no recreation. My work is my life," or "There is nothing I would rather do. In fact my boy says I am paid for playing."

It might be objected that men successful in any field would have much the same feeling about their work, and I am sure that is true to a certain degree. However, Terman's comparison between scientists and non-scientists again suggests that a particularly high level of work interest and work satisfaction is characteristic of scientists. More of Terman's basic research group than of any other group checked interest and aptitude as the chief factor in their selection of an occupation and checked their work itself as an aspect of life giving greatest satisfaction. They were second only to the humanities group in failure to check income as a major factor in life satisfaction.

Shannon, using biographical characterizations of 250 eminent research workers, finds among the ten traits most frequently mentioned, six that are definitely motivational. Heading the list is enthusiasm and research zeal. The others are aggressiveness and drive, industriousness, desire for truth, perseverance, concentration.

Roe suggests that the basic motives of her group of scientists are curiosity and independence. It was her impression that as a group they had an extraordinarily intense need to get the answers to questions that interested them and to get those answers for themselves. Many of her

findings seem to support this interpretation and there is additional confirmation in Van Zelst's and Kerr's interesting finding that the productive and the relatively unproductive members of a group of 194 scientists were differentiated to a significant degree by their responses to questions about preferred ways of working. The relatively productive researchers more frequently favored setting their own deadlines, working for intrinsic rather than economic goals, and participating in individual rather than group research projects.

Possibly related to this outstanding trait of independence is a trait which our investigators find notable for its absence; religious interest. Terman's basic research group is the only one in which no member checked religion as a source of life satisfaction. None of Roe's subjects spontaneously mentioned religious activities as important to him. However, most of them did send their children to Sunday School and some attended church upon occasion.

I have left until last the extremely important matter of intellectual differences. Actually the studies I am reviewing here have relatively little to contribute beyond the altogether unsurprising generalization that scientists are people of very superior intellectual caliber. We would like much more information about how scientists differ intellectually from other people of superior endowment. In employment situations, investigators have begun to approach this problem through attempts to develop tests of intellectual functions particularly pertinent to the work of scientific and technical personnel. Mandell and Adams, for example, report promising results from tests getting at such things as evaluation of relation of facts to hypotheses, interpretation of statistical data, critical understanding of research design.

The odds and ends I have been able to assemble certainly do not constitute a complete portrait, but the outlines are beginning to be blocked in. Already in employment situations a few such trivial-seeming items as lack of participation in

NOW OVER 5100
BIOS CHEMICALS
• ELLAGIC ACID
• EPICATECHIN
• ERBIUM OXIDE
• ERGOMETRINE TARTRATE
• ERGOTAMINE TARTRATE
• ESTRIOL
• ESTRONE SULFATE
• 1,2-ETHANEDISULFONIC ACID
• ETHANEDITHIOL
• ETHYL BORATE
• ETHYLENEGLYCOL DINITRATE
• N-ETHYLETHYLENEDIAMINE
• N-ETHYLETHYLENEIMINE
• ETHYL ISOTHIOCYANATE
• N-ETHYLMALEIMIDE
Ask for our new complete catalogue.
BIOS Laboratories, Inc.
17 West 60th St. New York 23, N. Y.
Plaza 7-8171

high school athletics have been shown to have some predictive value. Considering this reasonably promising start toward understanding the development of scientists, progress along these lines should be interesting to watch.

References

Anastasi, A., and Foley, J. P., 1949. *Differential psychology,* New York, The Macmillan Co.

Johnson, D. M., 1955. *The Psychology of thought and judgment,* New York, Harper and Brothers.

Mandell, M. M., and Adams, S., 1948. Selection of physical scientists, *Educ. Psychol. Meas.,* 8:575-581.

Roe, Anne, 1952. *The making of a scientist,* New York, Dodd, Mead & Co.

Shannon, J. R., 1947. Traits of research workers, *J. Educ. Res.,* 40: 513-521.

Terman, L. M., 1954. Scientists and Non-scientists in a group of 800 gifted men, *Psychol. Monogr.,* 68, No. 7.

Van Zelst, R. H., and Kerr, W. A., 1951. Some correlates of technical and scientific productivity, *J. Abnorm. & Social Psychol.,* 46: 470-475.

Opportunities

Doris Eager, M.A.I.C.

AIC members who are seeking positions may place notices in this column without charge.

Chemists Available

Chemical Marketing: Outstanding young chemical engineer; 8 years successful experience in chemical sales, technical service, market development, market research and product management with industry leaders, seeks place on management team of small company. Box 80, THE CHEMIST.

PHOENIX

CHEMICAL LABORATORY, INC.

Specialists in Petroleum Products

Chemical Tests • Physical Tests

Qualification Tests

3953 Shakespeare Avenue

CHICAGO 47, ILL.

"Cavalcade of Color": Song and dance revue produced by *Good Housekeeping* magazine and the National Retail Dry Goods Association will dramatize the evolution of dyes in the history of costume at the Perkin Centennial of the American Association of Textile Chemists and Colorists, September 13th, at four p.m., the Waldorf-Astoria, New York, N. Y.

COUNCIL

OFFICERS

President, John H. Nair
President-elect, Henry B. Hass
Chairman of The Board, Dr. Ray P. Dinsmore
Secretary, Lloyd Van Doren
Treasurer, Frederick A. Hessel

COUNCILORS

Johan A. Bjorksten, *Chicago Chapter*
W. B. Blumenthal
Niagara Chapter
John R. Bowman, *At-Large*
Cecil L. Brown
New Jersey Chapter
Emmett B. Carmichael
Alabama Chapter
Austin W. Fisher, *At-Large*
Harry L. Fisher, *At-Large*
Lloyd A. Hall, *At-Large*
F. B. Havens, *Western Chapter*
Donald B. Keyes, *At-Large*
S. D. Kirkpatrick, *At-Large*
Guy A. Kirton, *Ohio Chapter*
Wesley R. Koster
Washington Chapter
Harold A. Levey, *Louisiana Chapter*
R. L. Moore, *New York Chapter*
Emil Ott, *At-Large*
George L. Royer, *At-Large*
M. Sittenfield, *Pennsylvania Chapter*
W. J. Sparks, *At-Large*
George H. Taft,
New England Chapter
Albin H. Warth, *Baltimore Chapter*

May Meetings

The 308th meeting of the National Council was held May 9, 1956, at 7:00 p.m., at the Statler Hotel, Boston, Mass. President R. P. Dinsmore presided. The following officers and councilors were present: Messrs. J. Bjorksten, J. R. Bowman, R. P. Dinsmore, A. W. Fisher, Jr., K. M. Herstein, F. A. Hessel, D. B. Keyes, J. H. Nair, E. Ott, P. E. Reichardt, G. L. Royer, M. Sittenfield, W. J. Sparks, C. L. Thomas, and L. T. Work. John T. Blake, chairman of the Annual Meeting Committee; W. B. Blumenthal, chairman of the Niagara Chapter; L. T. Eby, chairman of the Membership Committee; L. H. Flett, chairman of the Gold Medal Committee, M. J. Kelley, chairman of the Committee on Manual of Council Operations; S. B. McFarlane, chairman of the Committee on Employer-Employee Relations; H. M. Olson, chairman of the Ohio Chapter; R. S. Robinson, chairman of the Committee on Annual Meeting Arrangements; W. R. Smith, chairman of the New England Chapter, G. H. Taft, chairman of the Committee on Annual Meeting Publicity, and V. F. Kimball were present.

The Secretary's report was presented showing a total of 2811 AIC members.

The following deaths were reported with deep regret: Edmond R. Bullock, F.A.I.C., Feb. 24, 1956; Dr. Peter Conroy, F.A.I.C., June 17, 1955; J. Bernard Edmonds, F.A.I.C., Oct. 25, 1954; Seymour Faulkner, F.A.I.C., March 21, 1956; Dr. Ernst A. Hauser, F.A.I.C., Feb. 10, 1956; Edward Hazelhurst, F.A.I.C., Spring of 1956; Dr. Edward W. Neuman, F.A.I.C., Spring of 1956; Dr. Kurt G. Stern, F.A.I.C., Feb. 3, 1956; and Dr.

Joseph A. Wolf, F.A.I.C., Fall of 1955. In memory of these Fellows, the Council observed a moment of silence.

The report of the Tellers of Election Ballots was presented, showing the following officers and councilors for the 1956-57 fiscal year: President, John H. Nair; President-elect, Dr. Henry B. Hass; Secretary, Dr. Lloyd Van Doren; Treasurer, Dr. Frederick A. Hessel; Councilors-at-large: Dr. D. B. Keyes, Dr. Sidney D. Kirkpatrick, and Dr. Harry L. Fisher; Councilor-at-Large (uncompleted term of two years), Dr. A. W. Fisher, Jr.

The Treasurer's Annual Report and Statement of Audit was accepted.

The Secretary was asked to bring to the attention of the AIC Chapters the Group Health and Accident Plan adopted by the New York Chapter. Details of the plan will be supplied by the New York Chapter on request.

The following applications for Emeritus Status, referred by the Board of Directors, were approved: Dr. Hugh B. Corbitt; Dr. Harry E. Dubin; Dr. Herbert H. Guest; Dr. Arlington C. Krause; Aaron Merzbacher; Leslie L. Perry; Robert A. Phair Richard B. Sheridan, and Lois W. Woodford.

Upon motion, the following resolution was adopted:

Resolution

Resolved: That the members of the National Council of the AIC, at this 33rd Annual Meeting assembled, do hereby accept, ratify, confirm, and affirm, all of the acts of the officers and board of directors on behalf of the AIC during the fiscal year ended April 30, 1956.

Upon motion, the New England Chapter and its committees and all committee members concerned with this 33rd Annual Meeting, were commended most heartily for the excellence of the program and the pleasantness of the arrangements.

Dr. Dinsmore, retiring president, thanked the officers and councilors for their cooperation and congratulated the committees and those responsible for the Annual Meeting.

The following new members were elected:

FELLOWS

Alnutt, Donald

Director of Graphic Arts Research, 20 Laurence Court, Closter, N. J.

Arrandale, Dr. Roy S.

Vice President & Technical Director, Thatcher Glass Mfg. Co., Box 265, Elmira, New York.

Bloom, Dr. Albert

Supervisor, Intermediates Process Development Dept., 9 Blackburn Road, Summit, N. J.

Dahle, Joseph

Private Consultant in Synthetic Resins, Box 611, Allentown, Pa.

DallaValle, Dr. Joseph M.

Professor, School of Chemical Engineering, Georgia Institute of Technology, Atlanta 13, Georgia.

Dart, Jack C.

Woodward Road, Moylan, Pa.

Dietz, Dr. Fred C.

Assistant Professor, Dept. of Physical Sciences, California State Polytechnic College, San Luis Obispo, Calif.

Dobay, Dr. Donald G.

Research Chemist, B. F. Goodrich Co., Research Center, Brecksville, Ohio.

Draper, Dr. John D.

Professor of Chemistry & Head of Dep't., Bethany College, Bethany, West Virginia.

Ernsberger, Dr. Maurice L.

Director, Organic Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., 7410 Nemours Bldg., Wilmington, Delaware.

Estee, Dr. Charles R.

Head, Dep't. of Chemistry, University of South Dakota, University Exchange, Vermillion, S.D.

Etienne, Arthur D.

Chemist, Laboratory, U. S. Internal Revenue Service, Alcohol & Tobacco Tax Division, Room 7601, Internal Revenue Bldg., Washington, D. C.

Fall, Dr. Harry H.

3404 Cantebury Avenue, Kalamazoo, Michigan.

Feeney, Dr. Robert J.

Research Project Coordinator, Chas. Pfizer & Co., Inc., 630 Flushing Avenue, Brooklyn, New York.

Fossum, Dr. John H., Sr.
Senior Research Chemist, American Viscose Corp., Film Division, Marcus Hook, Pa.

Fowles, George A.
Manager, Plastic Materials Sales, B. F. Goodrich Chemical Co., 324 Rose Bldg., Cleveland 15, Ohio.

Frediani, Dr. Harold A.
Executive Director of Control, Bristol Laboratories, Inc., Syracuse, New York.

Gangemi, Nicholas C.
Assistant Director of Research, Pennsylvania Industrial Chemical Corp., Delaware Ave. & Jeffrey St., Chester, Pa.

Geitz, Dr. Robert
Chief, Organic Process Development Section, Lever Brothers Co., Research Div., 45 River Road, Edgewater, N. J.

Geldzahler, Charles
Technical Director, Platers Technical Service, Inc., 509 S. Wabash Ave., Chicago, Ill.

Hoak, Dr. Richard D.
Senior Fellow, Mellon Institute of Industrial Research, 4400 Fifth Avenue, Pittsburgh 13, Pa.

Hoekje, Dr. Howard H.
Group Leader, Inorganic Chemicals, Columbia-Southern Chemical Corp. Box 4026, Corpus Christi, Texas.

Hoeman, Erwin C.
Scientific Administrator, Environmental Test Laboratories, Dugway Proving Ground, Dugway, Utah.

Hoffman, Dr. Gilbert F.
Technical Director & Vice President, O'Neil Durco Co., Box 1166, Milwaukee, Wis.

Hoover, Kenneth H.
Director of Research; Member, Board of Directors, R. J. Reynolds Tobacco Co., Winston-Salem, North Carolina.

Hougen, Joel O.
Professor of Chemical Engineering, Dept. of Chemical Engineering, Rensselaer Polytechnic Institute, Troy, New York.

Howard, Everett W.
Representative Contract Sales, The M. W. Kellogg Co., 711 Third Ave., New York, N. Y.

Jolley, Homer R., S.J.
Assistant Professor, Loyola Univerity, New Orleans 18, La.

Kummerow, Dr. Fred A.
Associate Professor of Food Chemistry, Dept. of Food Technology, University of Illinois, Urbana, Illinois.

McKenna, Thomas A. Jr.
Laboratory Foreman, Firestone Tire & Rubber Co., P. O. Box 1361, Lake Charles, La.

Miller, Royal A.
Technical Director, Illinois Farm Supply Co., 100 East Ohio St., Chicago 11, Ill.

Taft, William K.
Manager & Director of Government Laboratories, University of Akron, Akron, Ohio.

Vlases, Dr. George, Jr.
Chief Chemist, Administrative Head & Director of Research and Analytical Work, Technical Services, U. S. Customs, Washington 25, D. C.

REINSTATED AS FELLOW

O'Neil, Thomas M., Jr.
Technical Service & Research, Heyden Chemical Corp., 342 Madison Ave., New York, N. Y.

MEMBERS

Anderson, David A.
Research Chemist, Picatinny Arsenal, Dover, New Jersey.

Boucher, Dr. Raymond E.
Research & Development Chemist, Polak's Frutal Works, Sprague Ave., Middletown, N. Y.

Cziner, Rudolph
R. S. Aries & Associates, 270 Park Avenue, New York 17, New York.

Dressler, Dr. Hans
Fellow, Monomer Synthesis, Mellon Institute of Industrial Research, 4400 Fifth Avenue, Pittsburgh 13, Pa.

Fulson, Franklin C.

Chemist, Titanium Alloy Mfg. Div., National Lead Co., 4511 Hyde Park Blvd., Niagara Falls, New York.

Johnson, Dr. Joe Walter

Assistant Director, Darco Experimental Lab., Atlas Powder Co., Marshall, Texas.

Placek, Chester

Assistant Editor, American Chemical Society Industrial Publications, 86 East Randolph St., Chicago 1, Ill.

ASSOCIATE

Reid, Roger T.

Technical Sales Representative, Braun Corporation, 1363 S. Bonnie Beach Place, Los Angeles 54, Calif.

The 309th meeting of the National AIC Council was held May 11, 1956, at 8:30 a.m., at the Hotel Statler, Boston, Mass. John H. Nair, newly elected president, presided. The following officers and councilors were present: Messrs.: J. Bjorksten, R. P. Dinsmore, A. W. Fisher, Jr., F. A. Hessel, D. B. Keyes, S. D. Kirkpatrick, J. Kotrady, J. H. Nair, P. E. Reichardt, G. L. Royer, and M. Sittenfield. W. B. Blumenthal, chairman of the Niagara Chapter; Dr. L. T. Eby, chairman of the Membership Committee; K. M. Herstein of the Qualifications Committee; Dr. M. J. Kelley, chairman of the Committee on Manual of Council Operations; Samuel B. McFarlane, chairman of the Committee on Employer-Employee Relations, and V. F. Kimball were present.

President Nair announced that he was making the following Committee appointments:

Committee on Qualifications,
John Kotrady, chairman.

Committee on Professional Education,
Dr. C. L. Brown, chairman.

Committee on Ethics,
Dr. Henry B. Hass, chairman.

Committee on Legislation,
Paul E. Reichardt, chairman.

Committee on Honorary Membership,
Dr. R. P. Dinsmore, chairman.

Committee on Manpower.
Dr. G. L. Royer, chairman.

Committee on Professional Liaison,
Dr. S. D. Kirkpatrick, chairman.

Committee on Membership,
Dr. L. T. Eby, chairman.

Committee on Employer-Employee Relationships,
S. B. McFarlane, chairman.

Committee on AIC History,
Miss Florence E. Wall, chairman.

Committee on Manual of Council Operations.
Dr. M. J. Kelley, chairman.

Program Committee for 1957 Annual Meeting:
Dr. Henry B. Hass and Dr. J. D. d'Ianni.

Other appointments will be announced later.

Mr. Kotrady, chairman of a committee to consider student medal awards, reported, and the report was referred to the Executive Committee.

Mr. McFarlane presented his report, embodying letters from the Chicago subcommittee of the Employer-Employee Relations Committee. The first section of the report considered the problem of "Over Forty Chemists." This was referred to the Manpower Committee. The second part, "Grievances" was considered to be in the province of the Ethics Committee. The third section dealt with "Employment Advisory Service." The fourth section discussed the Model Contract. It was decided to send placement officers in colleges copies of the contract form.

Dr. Keyes stated that the Executive Committee recommended that a Central Planning Committee be created to decide the dates and places of Annual Meetings, to consist of the following: (1) the Chairman of the Board; (2) the President, (3) the President-elect, (4) the Secretary, (5) the Treasurer, (6) a Representative of the Midwest, (7) a Representative of the West Coast, and (8) in case none of the above officers are from the East, then a Representative from the East.

President Nair announced that in accordance with a previous decision of the Council, the two delegates from the AIC to the American Association for the Ad-

vancement of Science are now: President-elect, Dr. Henry B. Hass, and Secretary, Dr. Lloyd Van Doren.

Arthur D. Little, Inc., was thanked for its fine hospitality in connection with the Annual Meeting and Godfrey L. Cabot, Inc., was thanked for its gift of tickets to the Boston Pops Concert in connection with the Ladies' Program.

For Your Library

Currents in Biochemical Research 1956

David E. Green, Editor. Interscience Publishers, Inc. 697 *pp.* 6" x 9½". $10.00.

This decennial review contains twenty-seven essays by as many prominent biochemists. According to the editor, the objectives of these essays have been to communicate to non-specialists an overall impression of the present status of the significant problems in each field. The following are some of the subjects which have been included: Viral growth, photosynthesis, bacterial fermentation, vitamins and growth factors, certain diseases, hormones, cellular biochemistry, several different essays on enzymes, protein structure, ribonucleic acids, biochemical synthesis, carcinogenesis. Although only certain problems of some phases of biochemistry have been covered, progress made in the respective fields has been well described.

—Dr. Henry Tauber, F.A.I.C.

THE LENTO PRESS, INC.

Distinctive Printing

441 Pearl Street New York, N. Y.

WOrth 2-5977

MOLNAR LABORATORIES

Organic Process Development, Control Laboratory and Pilot Plant Studies

Toxicology • Bacteriology • Biochemistry

Your Inquiries Invited

211 E. 19th Street, New York 3, N. Y.

Telephone: GRamercy 5-1030

Paper Chromatography

By Dr. Frederick Cramer. Translated by *Leighton Richards, B. Sc. St. Martins' Press.* 124 *pp.* $5.00.

This is the second edition of a volume first published in Germany in 1951, by a professor of the University of Heidelberg. The micro-analytical method it describes was discovered by the English scientists, Consdon, Gordon, and Martin, in 1944, and has proved to be of extraordinary value with manifold applications.

One of the discoverers of this ingenious process has written a foreword for this edition and tells of the final stages of the first two-dimensional chromatization in an atmosphere of coal-gas. "As the tin box we used was far from gas-tight, it had to be put outside the laboratory with its precious cargo, the box was manoeuvered onto a narrow window ledge, situated unpleasantly high over a concrete path; and left there overnight with gas passing in. After this memorable occasion, we avoided working on the window ledge by the simple expedient of blocking the leaks with wet soap, after locating them with a lighted taper passed over the outside of the gas-filled box."

After that brief glimpse at those "early adventurous days," we find in Dr. Cramer's book a practical manual, giving first, the theoretical background of partition methods; their general operating techniques; and lastly the separation of specific substances.

Four transparent charts for the identification of chromatograms, a complete bibliography, subject and author indices; all add to the value of this book.

—Dr. Frederick A. Hessel, F.A.I.C.

The Technology of Solvents and Plasticizers

By Arthur K. Doolittle. John Wiley & Sons. 1056 *pp.* $18.50.

The author, assistant director of research of Carbide and Carbon Chemicals Corp., speaks with authority on the production of plastics, coatings, fibers, and adhesives; their formulation and application, and the handling, storage, and shipping of the raw and finished products. With engineers in mind, he has written a chapter on solvent recovery which explains the fundamental principles of vapor phase techniques. For the physical chemist, he has elucidated the various theories of viscosity and of solvent action. But the main purpose of the book is to acquaint those in the industry who make the end products involving solvents and plasticizers with the technology of these chemicals. In many chapters, the material is divided so that the scientifically-trained man may find the detail he seeks; whereas, the reader who lacks scientific training may simply omit those portions containing theoretical descriptions.

Technological fundamentals are illustrated by charts which show how important properties are affected by various conditions and components; and other tabulations and charts afford a quick grasp of the physical and chemical data on the 161 solvents and 131 plasticizers now commercially available. This book is a must for industrial laboratories.

—Dr. Frederick A. Hessel, F.A.I.C.

General Chemistry

By L. E. Steiner and J. A. Campbell. The Macmillan Company. 1955. 675 *pp.* $6.50.

Both authors are professors of chemistry at Oberlin College, who "have tried to give a course which has meaning in a liberal arts setting, is rigorous enough to give the student some feeling for the nature of fact and proof in chemistry as a science and comprehensive enough in scope to test a student's desire for more work in chemistry." This general chemistry text written in an unorthodox manner is the happy result.

—Dr. J. A. Steffens, F.A.I.C.

ROBINETTE RESEARCH LABORATORIES, INC.

Industrial Research -:- Consultation
Technical and Economic Surveys
Product Development
Chemical Market Research

16 East Lancaster Avenue
Ardmore, Pa. Tel. Midway 2-6457

Imidazole and Its Derivatives

By Klaus Hofmann. Vol. 6 of the Chemistry of Heterocyclic Compounds Series. Interscience Publishers, Inc. 447 *pp. Subscription* $12.25. *Single Copy* $13.50.

Written by a professor of biochemistry at the Medical School of the University of Pittsburgh, this volume summarizes the chemistry of the imidazoles, imidazolines, imidazolidines, and benzimidazoles and their derivatives. In Section I, a critical evaluation of the synthetic methods and the fundamental physical and chemical properties are given as well as brief descriptions of the pharmacological properties of some of the biochemically important derivatives. Section II contains a comprehensive non-critical survey of the pertinent literature (from 1919 to 1950) and names, melting points, of some derivatives and literature references are given.

The book is a readable and easily understood presentation of the fundamentals and appears to contain a comprehensive coverage of the whole field. A subject index follows the survey and bibliography.

—Dr. Frederick A. Hessel, F.A.I.C.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Verlag Chemie, Weinheim/Bergstr.: *Deutsche Chemiker in der ersten Haelfte des 19. Jahrhunderts,* by W. Prandtl; 1956, 352 pp. (50 ill.); DM 29.50—Well written biographies of 9 German chemists of the first half of the 19th century—i.e., at the beginning of modern chemistry. The life stories of J. N. Fuchs, F. von Kobell, J. W. Doebereiner, J. von Liebig, F. von Woehler, Chr. F. Schoenbein, E. Mitscherlich, H. Rose, and G. Magnus are interwoven with many excerpts from scientific journals and personal letters. An

interesting document of a scientifically most important period of time.

Fachliteratur-Ermittlungs—und Berichtsdienst, Garmisch-Partenkirchen: *Kosmetische Verfahren in Patentschriften,* by H. Manneck.—This review of the cosmetic patents of the world was published between 1952 and 1955. It consists of 7 paperbound parts which deal with skin cosmetics (Vol. I, 53 pp., DM 30.-); hair cosmetics (Vol. II., 61 pp., DM 36.-); mouth cosmetics (Vol. III., 20 pp., DM 14.-): shaving preparations (Vol. IV, 13 pp., DM 10.50); beauty aids (Vol. V, 21 pp., DM 14.-); various cosmetics, such as bathing salts and deodorants (Vol. VI, 26 pp. DM 17.50); and Supplement of patents of the years 1945-1952 (66 pp., DM 30.-)

Georg Thieme Verlag, Stuttgart: Of the *Methoden der organischen Chemie,* by E. Mueller, the Vol. III/1: *Physikalische Forschungs-methoden* (954 pp., 448 ill; DM 162.-) has now become available. It is with admiration for the extraordinary efforts put into this work by editor and publisher that we call attention to the 7th volume of Houber-Weyl's revised methods of organic chemistry (4th ed., see also THE CHEMIST of February 1956). In 16 chapters 18 German experts discuss in great detail all the mechanical, thermal, microscopic, mass-spectrometric, and isotopic methods which have proved useful for the determination of density, solubility, vapor pressure, molecular weight, molecule form and other characteristics of organic compounds.

The Pharmaceutical Press, London WC 1: *The Extra Pharmacopoeia* (Martindale), Vol. II.; 23rd ed., 1501 pp.; 57s. 6d—An indispensible reference book describing U.S.A. and British drugs and giving adequate and accurate information (with literature sources) about the best methods employed in Europe and America for the analysis of pharmaceuticals and foodstuffs; it contains in addition chapters on bacteriological and clinical biochemical methods, relationship between chemical structure and physiological action, disinfection and sterilization, spot testing for the identification of drugs, etc.

Gebrueder Borntraeger, Berlin—Nikolassee: *Physiologie der Zelle,* by J. Haas; 1955, 474 pp. (48 ill.); DM 48.—The author, a graduate of the Fordham University, has done extensive research on co-ordinated the vast amount of information obtained from the fields of biochemistry, enzymology, cytology, physiology, genetics, embryology, and electron microscopy to a coherent picture of the life of cells, their morphology, organs, and functions. By the same publisher: • *Kurzes Lehrbuch der Cellulosechemie,* by Th. Lieser; 1953, 288 pp. (88 ill.); DM 36.—A monograph on cellulose with emphasis on its chemical reactions, derivatives, and the constitution of the many "celluloses".

RARE CHEMICALS

Tetranitromethane

Inorganic Nitrides

Organic Nitrates

O. JOHNSON & E. SCUDDER

92 ORCHARD STREET

Bloomfield, N. J.

Hadert-Lexikon Verlag, Berlin W 30: *Technische Fette und Wachsgemische,* by H. Hadert; 2nd ed., 231 pp.; paperbound DM 14.80 — A pocketbook-size compilation of hundreds of formulations of technical fats and wax mixtures, with introductory paragraphs about the nature and properties of these materials.

Akademische Verlagsgesellschaft Geest & Portig, Leipzig; *Handbuch der technischen Elektrochemie,* by G. Eger; Vol. IV, Part 2A: *Die Anwendung des elektrischen Ofens in der Industrie der Eisenmetalle* (416 pp., 206 ill.; DM 54.-) and Part 3A: *Elektrooefen in der Industrie der Nichteisenmetalle* (335 pp., 143 ill.; DM 36.-)—the former describes electric furnaces used for the production of iron, steel, and stainless steels; the latter discusses those used to produce Cu, Ni, Co, Pb, Sn, Zn, Al, and Mg. (See also THE CHEMIST, January 1956.)

Editio Cantor, Aulerdorf i. Wuertt.: *Die Brenztraubensaeure und ihr Stoffwechsel,* by K. Schreier; 1956, 108 pp. (34 ill.); paperbound DM 16.20—History, physiology, and methods of identification and determination of pyruvic acid, with emphasis on the important role it plays as an intermediary metabolite in healthy and sick human beings.

RAPID, ACCURATE... LOW IN PRICE!

Beckman Gas Chromatograph

IF YOU analyze gases and liquids that boil below 80° C., it will pay you to get complete information on this new analytical tool which features a coiled chromatographic column.

The Gas Chromatograph is a specialized instrument that gives topnotch performance. It is simple, compact, easy to use. Provisions have been made so that a standard potentiometer recorder may be employed.

In spite of its small size (20″ x 16″ x 9″), the Gas Chromatograph closely controls the important variables in gas chromatography, making it a stable, sensitive instrument. Temperature is accurately regulated by a sensitive thermostat; flow is accurately controlled by combining a pressure-regulator and high-pressure capillary orifice. The detector is an exceptionally stable diffusion-type filament cell which has a short path-length for fast response.

Bulletin TC-482 tells the story.
Why not ask us for a copy?

SCIENTIFIC GLASS APPARATUS CO., INC.
BLOOMFIELD - NEW JERSEY
LABORATORY APPARATUS - INSTRUMENTS - CHEMICALS - GLASSWARE

TYGON FLEXIBLE PLASTIC TUBING

GLASS CLEAR FOR VISUAL CONTROL

NON-CONTAMINATING NON-TOXIC

SEAMLESS, SMOOTH INSIDE AND OUT

TOUGH, FLEXIBLE, EASY TO HANDLE

137E

Tygon Tubing is chemically inert and will handle every fluid, gas and air transmission task normally encountered in the laboratory.
It is extremely flexible and easy to connect or disconnect. Adheres tightly to glass or metal without clamping.
Tygon Tubing is available in all required sizes from laboratory supply houses everywhere.

PLASTICS and SYNTHETICS DIVISION

U. S. STONEWARE

Akron 9, Ohio